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[54] **GUIDEWIRES WITH LUBRICIOUS SURFACE AND METHOD OF THEIR PRODUCTION**

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[58] Field of Search **128/772, 657, 658; 604/280, 264, 170; 264/41, 173, 177.18, 182; 427/208.4, 337, 336; 523/113; 524/916; 525/329.1, 329.2, 324.3; 428/424.7**

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[57] **ABSTRACT**

The present invention guidewire involves an elongated, non-hydrogel core element forming an inner part of the device, and an integral outside tubular layer of elastomeric hydrogel ("hydrogel sleeve"). This outer hydrogel layer has unique physical characteristics. They are (a) Gradient of chemical composition with increasing concentration of polar groups in the outward direction away from the core element; (b) Gradient of swelling in contact with water with water content increasing in the outward direction away from the core element; (c) Compressive stress in the outer hydrophilic layer causing the hydrogel in that layer to swell to a water content lower than its equilibrium value in a free-swelling state; and, optionally, (d) Inward-directed radial stress pushing the outside hydrogel layer constantly against the inner core element. The present invention also involves the methods of making these guidewires, including melt extrusion directly onto the core element, coagulation from solution, in situ hydrogel polymer formation, and tubing extrusion followed by consequent shrink-fit over the core.

31 Claims, 6 Drawing Sheets

